



**National
Transportation
Safety Board**

Human Performance Factors

Dennis Collins

Human Factors Overview

- School bus driver
 - Intersection scanning
 - Cognitive performance
- CDL medical exam process
 - Exam of school bus driver
 - Drug effects/interactions
 - Previous NTSB recommendations

Intersection Scanning Behavior



Intersection Scanning Behavior

- Ineffective scanning
 - Decision to accelerate
 - Subsequent opportunity
- “Looked-but-failed-to-see” error
 - Environmental
 - Cognitive
 - Fatigue
 - Chronic Pain
 - Alcohol Use
 - Medications

Cognitive Performance Factors

- Time in bed
 - Approximately 5 hours
- Sleep
 - < 5 hours
 - Below human norm (7-9 hours)
 - Chronic partial sleep restriction
- Chronic pain
- Alcohol use

Cognitive Performance Factors

- Combination of three sedating medications
 - Clonazepam (anti-anxiety)
 - Desvenlafaxine (anti-depressant)
 - Tramadol (pain reliever)
- School bus driver was fatigued, contributed to ineffective scanning

CDL Medical Exam Process

- Exam of accident driver
 - 36 days prior
 - Not primary care physician
 - Unreported items

Medical Examination Report FOR COMMERCIAL DRIVER FITNESS DETERMINATION

649-F (6045)

1. DRIVER'S INFORMATION Driver completes this section								
Driver's Name (Last, First, Middle)		Social Security No.		Birthdate M / D / Y	Age	Sex <input type="checkbox"/> M <input type="checkbox"/> F	New Certification <input type="checkbox"/> Recertification <input type="checkbox"/> Follow-up <input type="checkbox"/>	Date of Exam
Address		City, State, Zip Code		Work Tel: () Home Tel: ()		Driver License No.		License Class <input type="checkbox"/> A <input type="checkbox"/> C <input type="checkbox"/> B <input type="checkbox"/> D <input type="checkbox"/> Other

2. HEALTH HISTORY Driver completes this section, but medical examiner is encouraged to discuss with driver.		
<p>Yes No</p> <p><input type="checkbox"/> <input type="checkbox"/> Any illness or injury in the last 5 years?</p> <p><input type="checkbox"/> <input type="checkbox"/> Head/Brain injuries, disorders or illnesses</p> <p><input type="checkbox"/> <input type="checkbox"/> Seizures, epilepsy <input type="checkbox"/> medication _____</p> <p><input type="checkbox"/> <input type="checkbox"/> Eye disorders or impaired vision (except corrective lenses)</p> <p><input type="checkbox"/> <input type="checkbox"/> Ear disorders, loss of hearing or balance</p> <p><input type="checkbox"/> <input type="checkbox"/> Heart disease or heart attack; other cardiovascular condition <input type="checkbox"/> medication _____</p> <p><input type="checkbox"/> <input type="checkbox"/> Heart surgery (valve replacement/bypass, angioplasty, pacemaker)</p> <p><input type="checkbox"/> <input type="checkbox"/> High blood pressure <input type="checkbox"/> medication _____</p> <p><input type="checkbox"/> <input type="checkbox"/> Muscular disease</p> <p><input type="checkbox"/> <input type="checkbox"/> Shortness of breath</p>	<p>Yes No</p> <p><input type="checkbox"/> <input type="checkbox"/> Lung disease, emphysema, asthma, chronic bronchitis</p> <p><input type="checkbox"/> <input type="checkbox"/> Kidney disease, dialysis</p> <p><input type="checkbox"/> <input type="checkbox"/> Liver disease</p> <p><input type="checkbox"/> <input type="checkbox"/> Digestive problems</p> <p><input type="checkbox"/> <input type="checkbox"/> Diabetes or elevated blood sugar controlled by: <input type="checkbox"/> diet <input type="checkbox"/> pills <input type="checkbox"/> insulin</p> <p><input type="checkbox"/> <input type="checkbox"/> Nervous or psychiatric disorders, e.g., severe depression <input type="checkbox"/> medication _____</p> <p><input type="checkbox"/> <input type="checkbox"/> Loss of, or altered consciousness</p>	<p>Yes No</p> <p><input type="checkbox"/> <input type="checkbox"/> Fainting, dizziness</p> <p><input type="checkbox"/> <input type="checkbox"/> Sleep disorders, pauses in breathing while asleep, daytime sleepiness, loud snoring</p> <p><input type="checkbox"/> <input type="checkbox"/> Stroke or paralysis</p> <p><input type="checkbox"/> <input type="checkbox"/> Missing or impaired hand, arm, foot, leg, finger, toe</p> <p><input type="checkbox"/> <input type="checkbox"/> Spinal injury or disease</p> <p><input type="checkbox"/> <input type="checkbox"/> Chronic low back pain</p> <p><input type="checkbox"/> <input type="checkbox"/> Regular, frequent alcohol use</p> <p><input type="checkbox"/> <input type="checkbox"/> Narcotic or habit forming drug use</p>
<p>For any YES answer, indicate onset date, diagnosis, treating physician's name and address, and any current limitation. List all medications (including over-the-counter medications) used regularly or recently.</p> <p>_____</p> <p>_____</p> <p>_____</p>		

I certify that the above information is complete and true. I understand that inaccurate, false or missing information may invalidate the examination and my Medical Examiner's Certificate.

Driver's Signature _____ Date _____

Medical Examiner's Comments on Health History (The medical examiner must review and discuss with the driver any "yes" answers and potential hazards of medications, including over-the-counter medications, while driving. This discussion must be documented below.)



Medical Examination Report

FITNESS DETERMINATION

649-F (6045)

Yes No

- | | | |
|-------------------------------------|-------------------------------------|---|
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Elevated blood sugar controlled by:

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CDL Medical Exam Process

- Did Report:
 - Heart Disease & medication
 - Heart surgery
 - Digestive problems & medication
 - Depression & medication
 - Spinal injury/disease
 - Regular alcohol use
- Did NOT Report:
 - Chronic low back pain
 - Alcoholism/alcohol abuse
 - Tramadol
 - Oxycodone

CDL Medical Exam Process

- Unreported items
- Not thoroughly evaluated
- Likely not medically certified

CDL Medical Exam Process

- Drug effects/interactions
 - Examiners added in 1992
 - Board concern in 2001
 - Medical division/handbook
 - New examiner registry system
 - Still allows medical professionals with limited pharmacological knowledge

Summary

- Failure to effectively scan
 - Acute sleep loss, sleep debt, poor quality
 - Chronic pain
 - Alcohol use
 - Potentially sedating medications
- CDL medical process
 - Exam of accident driver
 - Drug/drug interaction knowledge
 - Information, guidance, and review



National Transportation Safety Board